MARINE
RECREATIONAL INFORMATION
PROGRAM

FY 2015 Project Plan

Estimating Recreational Fishing Effort through Onsite and Follow-Up Mail Surveys

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1. Overview

1.1. Background

The current Marine Recreational Information Program (MRIP) Access Point Angler Intercept Survey (APAIS) is an onsite survey designed primarily for estimating catch rate. The current method for estimating fishing effort depends on data collected by offsite surveys. The offsite surveys include the Coastal Household Telephone Survey or CHTS and the For-hire Telephone Survey or FHTS. The CHTS collects data primarily for the private boat and shore fishing modes, whereas the FHS collects data for only the charter boat and head boat modes. A newly designed household mail survey, the Fishing Effort Survey or FES, which collects data for the private boat and shore fishing modes, will take place in 2015. With catch rate estimated from onsite survey and effort from offsite survey, catch is estimated as the product of catch rate and effort.

In addition to conducting interviews with eligible anglers, the current APAIS includes counting all anglers who exit the fishing access site during the sampling period. The count of anglers obtained from the current APAIS provides a means for estimating effort (angler-trips). Onsite survey has several advantages over offsite survey. These advantages include more instant results, higher response rate, and less prone to reporting errors. However, onsite survey often suffers from the problem of undercoverage that arises when some anglers are not included in the sampling frame and therefore have no probability of being sampled. Also, onsite survey usually costs more per interview than telephone and mail survey and is often limited to a smaller number and geographically less widely distributed sample of anglers. A combination of the APAIS with the current telephone and the proposed mail survey will likely be able to overcome the disadvantages of independent surveys and provide more accurate and/or precise effort estimate.

We propose a pilot onsite survey or an addition to the current APAIS to investigate the factors that affect the accuracy of effort estimates and a follow-up mail survey to the proposed FES to measure public and private access fishing. The results of this pilot survey will help address issues concerning the adequacy of the current APAIS design for effort estimation. These results can also provide insights to improvement of the current APAIS design. Information about public and private access fishing obtained from the follow-up mail survey is needed to address the issue of sampling frame undercoverage in the onsite survey caused by the fact that the onsite survey is conducted primarily at public access sites.

Our previous studies based on the available data show that effort estimates from the APAIS are substantially lower than those from the offsite surveys for all fishing modes (private/rental boat, charter boat, and shore) except head boat. The differences in the effort estimates between the APAIS and the offsite surveys are likely caused by biases and sampling errors in the estimates from all surveys. In particular, the potentially incomplete sampling frame of registered public fishing access sites for the current APAIS will cause underestimate of fishing effort. Also, the current APAIS records the number of anglers who complete their fishing trip in randomly selected

time intervals within time blocks. The number of angler-trips within a time block is then estimated by expanding the average observed counts within these randomly selected time intervals by the length of the time block. Incomplete count of completed angler-trips from the fishing access sites will cause underestimate of fishing effort. In addition, this expansion approach assumes that anglers' departure times from the fishing access site are homogeneously distributed within each time block. Nonhomogeneous distribution of anglers' departure times can cause overestimate of fishing effort when the number of anglers' departures decreases with time, and overestimate when the number of anglers' departures increases with time, if the time intervals for counting completed angler-trips are selected inappropriately (Wang et al. unpublished study). The proposed pilot onsite survey will allow us to investigate the factors that affect the accuracy of the effort estimates from the current APAIS.

The sampling frame for the current APAIS contains mainly public access sites. A method for estimating effort that accounts for private access sites needs to be developed. This can be done by incorporating data collected by the offsite survey. The CHTS has collected data relevant to effort estimation for both public and private access sites. These data allows us to estimate the distribution of recreational fishing effort by access type (public vs. private) and hence, provide a means to assess the degree of sampling frame undercoverage for the current APAIS. Beginning in 2015, fishing effort by mode will be collected from the FES. The FES is conducted in a single phase of data collection and collects the minimum amount of information needed to estimate total recreational shore and private boat fishing activity. Specifically, each household resident is asked to provide the number of shore and private boat trips taken during the previous 12 months and the previous 2 months. Collecting the minimal amount of information from each household reduces printing and postage costs and helps encourages response by minimizing reporting burden. However, data for estimating the distribution of recreational fishing effort by access type will not be available through the current FES design.

Previous pilot studies have demonstrated the utility of two-phased data collection designs for collecting more detailed fishing information. In these studies, fishing households were identified through a screening phase, similar to the current FES design, and detailed trip information was collected through a follow-up, second-phase mail questionnaire. We propose to utilize this design to collected detailed trip information which will allow us to estimate the distribution of recreational fishing effort by access type and hence adjust effort estimates from onsite survey to account for private access fishing.

1.2. Project Description

To pave a way for investigating further the possibility of obtaining more accurate and/or precise effort estimates from the combination of the telephone and mail survey with the APAIS, we will need to first investigate the factors that affect the accuracy of the effort estimates from the current APAIS. Specifically, we will test approaches for improving the current APAIS to obtain more accurate/precise effort estimation through a pilot onsite survey. We will investigate the effects of

incomplete sampling frame of registered public fishing access sites and incomplete count of completed angler-trips from the fishing access sites. We will also examine alternative approaches for obtaining expanded angler counts for the time blocks by varying the methods of selecting time intervals within the time block for counting completed angler-trips. For example, one or more time intervals can be selected randomly within the time block or, alternatively, the time block can be first divided into two or more sub-blocks and then one or more time intervals are selected randomly from each of the sub-blocks. We will also consider collecting counts at a random sample of sites over full time blocks. This limited survey would enable us to compare the expanded counts generated using the various methods to an observed count. It also informs the distributions of the anglers' departure times. This pilot survey will be carried out as an addition to the current APAIS and on a small geographical scale so that the effect of the potentially incomplete sample frame of registered public fishing access sites can be minimized. In addition, we will explore the use of instantaneous angler count data for improving accuracy and/or precision of effort estimate (Hoenig et al 1993).

In addition, we will conduct a follow-up mail survey to the FES to collect more detailed fishing information including public and private access fishing. The information about public and private access fishing obtained from the follow-up mail survey will be used to adjust the onsite effort estimates so that effort from the private access sites are included in the estimates.

1.3. Objectives

The ultimate goal of this project is to pave a way for investigating further the possibility of improving accuracy and/or precision of effort estimate by combining the effort estimate from the current telephone and mail survey with the effort estimate from the APAIS. However, before attaining this ultimate goal, we will first investigate factors that affect the accuracy of effort estimates from the current APAIS through a pilot onsite survey. Results of this pilot survey will help address issues concerning the adequacy of the current APAIS design and enable us to improve the current APAIS design for the purpose of effort estimation. We will also investigate the distribution of recreational fishing effort by access type through a follow-up mail survey. Data collected from this follow-up mail survey will allow us to adjust the effort estimates from the onsite survey to account for private access fishing.

1.4. References

Hoenig J. M., Robson, D. S., Jones, C. M., and Pollock, K. H. 1993. Scheduling counts in the instantaneous and progressive count methods for estimating sportfishing effort. North American Journal of Fishery Management 13: 723-736.

2. Methodology

2.1. Methodology

For the proposed pilot onsite survey, we will examine the effect of incomplete sampling frame of registered public fishing access sites through identifying new sites and confirming existing sites. Newly identified public access sites will be added to the current database of the registered public access sites and included in the sampling frame. We will examine the effect of incomplete count of completed angler-trips from the fishing access sites by adding additional samplers to the sites and/or sampling time periods with high fishing activities. We will also examine alternative approaches for obtaining expanded angler counts for the time blocks by varying the methods of selecting time intervals within the time block for counting completed angler-trips. We will consider collecting counts at a random sample of sites over full time blocks so that we can compare the expanded counts generated using the various methods to an observed count. The current APAIS is designed to collect data for estimating catch rate. For effort estimation, the number of sampling assignments may need to be increased to improve spatial and temporal coverage. The proposed pilot onsite survey will cover private boat, shore, and charter boat fishing modes. It will be carried out as an addition to the current APAIS. The pilot onsite survey will be limited to only one state to minimize the cost and the effect of the potentially incomplete sample frame of registered public fishing access sites. The pilot onsite survey will also focus on the highly active sites and/or time periods.

For the follow-up mail survey, FES respondents who report fishing during the reference wave will be mailed a follow-up questionnaire designed to collect detailed information including public and private access fishing about each trip reported in the initial FES survey.

We wish to conduct the pilot onsite survey for 2 waves (presumably May-August) and the follow-up mail survey for a more extended time period than the onsite survey. Data collected by the follow-up mail survey outside the time period of the pilot onsite survey can be used in conjunction with the APAIS for effort estimation.

2.2. Regions

Gulf of Mexico, Mid-Atlantic, North Atlantic, South Atlantic

2.3. Geographic Coverage

1-2 states

2.4. Temporal Coverage

1-2 waves (2-4 months)

2.5. Frequency

2.6. Unit of Analysis

2.7. Collection Mode

Intercept, telephone, mail

3. Communications Plan

3.1. Internal

The project team members will meet monthly or whenever necessary. The team members will exchange thoughts through email, conference call, or face-to-face meeting.

3.2. External

Communications with external consultants and contractors will mainly be based on email and conference call. This project requires frequent (weekly or at least monthly) communications with the contractors who carry out the pilot surveys.

4. Assumptions and Constraints

4.1. New Data

Yes

4.2. Track Costs

Yes

4.3. Funding Vehicle

NEW CONTRACT

4.4. Data Resources

4.5. Other Resources

External statistical reviewers and consultants

4.6. Regulations

4.7. Other

5. Risk

5.1. Project Risk

Table 1: Project Risk

Risk Description	Risk Impact	Risk Probability	Risk Mitigation Approach
Completion of this project is subject to the availability of funding.	The pilot surveys proposed in this project will not be implemented without sufficient funding.	Medium	The pilot surveys proposed in this project will be postponed till funding to this study becomes available

6. Final Deliverables

6.1. Additional Reports

6.2. New Data Sets

6.3. New Systems

7. Project Leadership

7.1. Project Leader and Members

Table 2: Project Members

Project Role	Name	Organization	Title
Team Leader	Dave Van Voorhees	NOAA Fisheries	Supervisory Mathematical Statistician
Team Member	Rob Andrews	NOAA Fisheries	Fishery Biologist
Team Member	Shizhen Wang	NOAA Fisheries	Contractor Mathematical Statistician
Team Member	John Foster	NOAA Fisheries	Mathematical Statistician
Team Member	Tom Sminkey	NOAA Fisheries	Statistician Biologist

8. Project Estimates

8.1. Project Schedule

Table 3: Project Schedule - Major Tasks and Milestones

#	Schedule Description	Planned Start	Planned Finish	Prerequisites	Milestones
1	Project planning	04/01/2015	06/30/2015		
2	Data collection	07/01/2015	08/31/2016	1	Y
3	Data analysis	09/01/2016	12/31/2016	2	
4	Summary Report	01/02/2017	03/31/2017	3	

8.2. Cost Estimates

Table 4: Cost EstimatesYes

Project Need	Cost Description	Date Needed	Estimated Cost
Questionnaire development (layout, cognitive interviews, focus groups)			$35000.00
Data collection			$200000.00
Consultant support			$30000.00
TOTAL			$265000.00